

## CLAIMS

What is claimed is:

- 1 1. A method for providing self-provisioning of VoIP telephony service to a subscriber of  
2 the VoIP telephony service, the method comprising the computer-implemented steps  
3 of:  
4 instructing an un-provisioned residential gateway that is associated with the  
5 subscriber to collect a subscriber numeric identity that uniquely identifies the  
6 subscriber;  
7 instructing the residential gateway to collect a Personal Identification Number (PIN)  
8 information that is associated with the subscriber;  
9 receiving and verifying the subscriber numeric identity and Personal Identification  
10 Number (PIN) information;  
11 assigning an IP address that is associated with one or more Media Gateway Control  
12 Protocol (MGCP) messages that are sent by the residential gateway as a  
13 residential gateway IP address for the residential gateway; and  
14 using the residential gateway IP address to provision the residential gateway that is  
15 associated with the subscriber.
- 1 2. The method as recited in Claim 1, further comprising the step of verifying using an  
2 authentication database wherein the authentication database stores the subscriber  
3 numeric identity and PIN information.

1     3.     The method as recited in Claim 1, wherein the subscriber numeric identity is an E.164  
2     address.

1     4.     The method as recited in Claim 1, further comprising the step of:  
2     receiving a first notify command from the residential gateway, wherein the first notify  
3             command is sent in response to a telephone receiver connected to the  
4             residential gateway going off-hook; and  
5     instructing the residential gateway to collect a provisioning access number.

1     5.     The method as recited in Claim 4, wherein instructing the residential gateway to  
2     collect a provisioning access number further comprises sending a MGCP notification  
3     request with a first digit map associated with the provisioning access number.

6. The method as recited in Claim 1, further comprising the steps of:  
receiving and storing a provisioning access number from the residential gateway; and  
instructing the residential gateway to create a first VoIP connection between the  
residential gateway and an announcement server for sending a first VoIP  
message from the announcement server to the subscriber via the residential  
gateway in order to collect the subscriber numeric identity.

1     7.     The method as recited in Claim 6, further comprising the step of:  
2     receiving and storing the subscriber numeric identity from the residential gateway;  
3     and  
4     instructing the residential gateway to delete the first VoIP connection.

1 8. The method as recited in Claim 1, further comprising the step of:  
2 after the residential gateway deletes a first VoIP connection, instructing the residential  
3 gateway to create a second VoIP connection between the residential gateway  
4 and an announcement server for sending a second VoIP message from the  
5 announcement server to the subscriber via the residential gateway in order to  
6 collect the Personal Identification Number (PIN) information from the  
7 subscriber.

1 9. The method as recited in Claim 8, further comprising the step of:  
2 receiving and storing the Personal Identification Number (PIN) information; and  
3 instructing the residential gateway to delete the second VoIP connection.

1 10. The method as recited in Claim 6, wherein the announcement server is a separate  
2 process from a self-provisioning system call agent of a self-provisioning system that  
3 is associated with a provider of the VoIP telephony service.

1 11. The method as recited in Claim 1, wherein the step of instructing a residential  
2 gateway to collect a subscriber numeric identity is performed by a self-provisioning  
3 system call agent of a self-provisioning system that is associated with a provider of  
4 the VoIP telephony service.

1     12.     The method as recited in Claim 11, wherein the self-provisioning system call agent  
2             uses a Media Gateway Control Protocol (MGCP) notification request command for  
3             instructing the residential gateway to collect the subscriber numeric identity.

1     13.     The method as recited in Claim 1, wherein the step of instructing the residential  
2           gateway to collect a Personal Identification Number (PIN) information is performed  
3           by a self-provisioning system call agent of a self-provisioning system that is  
4           associated with a provider of the VoIP telephony service.

1     14.     The method as recited in Claim 13, wherein the self-provisioning system call agent  
2             uses a Media Gateway Control Protocol (MGCP) notification request command for  
3             instructing the residential gateway to collect the Personal Identification Number (PIN)  
4             information.

1     15.     The method as recited in Claim 1, wherein the step of verifying the subscriber  
2            numeric identity and PIN information is performed by a self-provisioning system call  
3            agent of a self-provisioning system that is associated with a provider of the VoIP  
4            telephony service.

1     16.     The method as recited in Claim 1, wherein the step of using a source IP address that is  
2             associated with Media Gateway Control Protocol (MGCP) messages that are sent by  
3             the residential gateway as a residential gateway IP address for the residential gateway  
4             is performed by a self-provisioning system call agent of a self-provisioning system  
5             that is associated with a provider of the VoIP telephony service.

1 17. The method as recited in Claim 1, wherein the step of using the residential gateway IP  
2 address to provision the residential gateway that is associated with the subscriber is  
3 performed by a self-provisioning system call agent of a self-provisioning system that  
4 is associated with a provider of the VoIP telephony service.

1 18. The method as recited in Claim 1, wherein the step of using the residential gateway IP  
2 address to provision the residential gateway further comprises the step of querying a  
3 Dynamic Host Configuration Protocol (DHCP) server for a mapping from the  
4 residential gateway IP address to a MAC address associated with the residential  
5 gateway and receiving a permanent IP address in response.

1 19. The method as recited in Claim 1, wherein the step of using the residential gateway IP  
2 address to provision the residential gateway further comprises the step of configuring  
3 a Dynamic Host Configuration Protocol (DHCP) server to offer a long-term IP  
4 address to the residential gateway.

1 20. The method as recited in Claim 1, wherein the step of using the residential gateway IP  
2 address to provision the residential gateway further comprises the step of configuring  
3 a Dynamic Host Configuration Protocol (DHCP) server to associate a Domain Name  
4 System (DNS) hostname that is based on the subscriber numeric identity with a MAC  
5 address of the residential gateway.

21. The method as recited in Claim 1, wherein the step of using the residential gateway IP address to provision the residential gateway further comprises the step of rebooting the residential gateway remotely by a self-provisioning system call agent of a self-provisioning system that is associated with a provider of the VoIP telephony service.

1     22.     The method as recited in Claim 1, wherein the residential gateway requests a location  
2             of one or more Domain Name System (DNS) server, a limited-access IP address, and  
3             a Media Gateway Control Protocol (MGCP) endpoint name of a self-provisioning  
4             system call agent of a self-provisioning system that is associated with the provider of  
5             the VoIP telephony service.

1     23.     The method as recited in Claim 1, further comprising using a subscriber registration  
2             center that is associated with a provider of the VoIP telephony service wherein the  
3             subscriber registration center performs the steps of:  
4             offering to the residential gateway a limited access IP address;  
5             offering to the residential gateway a location of one or more Domain Name System  
6                     (DNS) servers;  
7             offering to the residential gateway a Media Gateway Control Protocol (MGCP)  
8                     endpoint name of a self-provisioning system call agent of a self-provisioning  
9                     system that is associated with the provider of the VoIP telephony service.

1     24.     The method as recited in Claim 23, wherein the step of offering to the residential  
2             gateway a limited access IP address is performed through a Dynamic Host  
3             Configuration Protocol (DHCP) server.

1 25. The method as recited in Claim 23, wherein the step of offering to the residential  
2 gateway a location of one or more Domain Name System (DNS) servers is performed  
3 through a Dynamic Host Configuration Protocol (DHCP) server.

1 26. The method as recited in Claim 23, wherein the step of offering to the residential  
2 gateway a Media Gateway Control Protocol (MGCP) endpoint name of a self-  
3 provisioning system call agent of a self-provisioning system that is associated with the  
4 provider of the VoIP telephony service is performed through a Dynamic Host  
5 Configuration Protocol (DHCP) server.

1 27. The method as recited in Claim 23, wherein the protocol server directs a provisioned  
2 residential gateway to a standard call agent that is associated with the provider of the  
3 VoIP telephony service to enable VoIP calls and services.

1 28. A method for providing self-provisioning of VoIP telephony to a subscriber of a VoIP  
2 telephony service, the method comprising the computer-implemented steps of:  
3 receiving a first notify command from a residential gateway that is associated with the  
4 subscriber and that has not been provisioned, wherein the first notify  
5 command is sent in response to a lifting of a telephone receiver connected to  
6 the residential gateway;  
7 after receiving the first notify command from the residential gateway, instructing the  
8 residential gateway to collect a provisioning access number;

receiving a second notify command from the residential gateway, wherein the second notify command is sent with the provisioning access number;

receiving and storing the provisioning access number;

after receiving the second notify command, instructing the residential gateway to create a first VoIP connection between the residential gateway and an announcement server for sending a first VoIP message from the announcement server to the subscriber in order to collect a subscriber numeric identity that uniquely identifies the subscriber;

instructing the residential gateway to collect the subscriber numeric identity that is allocated to the subscriber;

receiving a third notify command from the residential gateway, wherein the third notify command is sent with the subscriber numeric identity;

receiving and storing the subscriber numeric identity;

after receiving the third notify command from the residential gateway, instructing the residential gateway to delete the first VoIP connection;

after the residential gateway deletes the first VoIP connection, instructing the residential gateway to create a second VoIP connection between the residential gateway and the announcement server for sending a second VoIP message from the announcement server to the subscriber in order to collect a Personal Identification Number (PIN) information from the subscriber;

instructing the residential gateway to collect the Personal Identification Number (PIN) information that is associated with the subscriber;





29. A computer-readable medium carrying one or more sequences of instructions for providing self-provisioning of VoIP telephony to a subscriber of VoIP telephony service, which instructions, when executed by one or more processors, cause the one or more processors to carry out the steps of:

- instructing an un-provisioned residential gateway that is associated with the subscriber to collect an subscriber numeric identity that uniquely identifies the subscriber;
- instructing the residential gateway to collect a Personal Identification Number (PIN) information that is associated with the subscriber;
- receiving and verifying the subscriber numeric identity and Personal Identification Number (PIN) information;
- assigning an IP address that is associated with one or more Media Gateway Control Protocol (MGCP) messages that are sent by the residential gateway as a residential gateway IP address for the residential gateway; and
- using the residential gateway IP address to provision the residential gateway that is associated with the subscriber.

30. An apparatus for providing self-provisioning of VoIP telephony to a subscriber of a VoIP telephony service, which apparatus, comprising:

means for instructing an un-provisioned residential gateway that is associated with the subscriber to collect an subscriber numeric identity that uniquely identifies the subscriber;

means for instructing the residential gateway to collect a Personal Identification Number (PIN) information that is associated with the subscriber;

8 means for receiving and verifying the subscriber numeric identity and Personal  
 9 Identification Number (PIN) information;  
 10 means for assigning an IP address that is associated with one or more Media Gateway  
 11 Control Protocol (MGCP) messages that are sent by the residential gateway as  
 12 a residential gateway IP address for the residential gateway; and  
 13 means for using the residential gateway IP address to provision the residential  
 14 gateway that is associated with the subscriber.

1 31. An apparatus for providing self-provisioning of VoIP telephony to a subscriber of a  
 2 VoIP telephony service, which apparatus, comprising:  
 3 a network interface that is coupled to the data network for receiving one or more  
 4 packet flows therefrom;  
 5 a processor;  
 6 one or more stored sequences of instructions which, when executed by the processor,  
 7 cause the processor to carry out the steps of:  
 8 instructing an un-provisioned residential gateway that is associated with the  
 9 subscriber to collect a subscriber numeric identity of the subscriber;  
 10 instructing the residential gateway to collect a Personal Identification Number (PIN)  
 11 information that is associated with the subscriber;  
 12 receiving and verifying the subscriber numeric identity and Personal Identification  
 13 Number (PIN) information;  
 14 assigning an IP address that is associated with one or more Media Gateway Control  
 15 Protocol (MGCP) messages that are sent by the residential gateway as a  
 16 residential gateway IP address for the residential gateway; and

17 using the residential gateway IP address to provision the residential gateway that is  
18 associated with the subscriber.

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